

CLAIMS

1. A vapor trap for detecting VOCs comprising:

a housing having a first end portion, a second end portion and at least one opening
5 in said second end portion for receiving gas vapor, wherein said second end portion of
said housing is at least partially buried in ground; and

a vapor containment mechanism detachably connected to said first end portion of
said housing.

10 2. The vapor trap, as set forth in Claim 1, wherein said vapor containment
mechanism further comprises a coupling operatively attached to said first end of said
housing and a plug threadedly engaged with said coupling.

15 3. The vapor trap, as set forth in Claim 1, wherein at least one of said first end
portion and said vapor containment mechanism is above ground.

4. The vapor trap, as set forth in Claim 1, wherein said at least one opening
further comprises a slot.

20 5. The vapor trap, as set forth in Claim 1, wherein said housing further
comprises a plurality of openings selected from the group consisting of:
a screen having a mesh size of approximately 0.020 inches or less; and
slots with any two adjacent slots separated by a distance ranging from
approximately 0.010 inches to approximately 0.020 inches, inclusive.

25 6. The vapor trap, as set forth in Claim 1, wherein said housing is cylindrical
and is comprised of polyvinyl chloride tubing.

7. The vapor trap, as set forth in Claim 1, further comprising a vapor sampling mechanism operatively connected to said first end portion of said housing and proximate to ground level.

5 8. The vapor trap, as set forth in Claim 7, wherein said vapor sampling mechanism further comprises a vapor tubing nipple connected in fluid relationship to said first end of said housing.

9. The vapor trap, as set forth in Claim 8, further comprising a vacuum pump
10 fluidly connected to said vapor sampling mechanism

10. The vapor trap, as set forth in Claim 9, further comprising an organic vapor analyzer fluidly connected to said vapor sampling mechanism.

15 11. The vapor trap, as set forth in Claim 10, further comprising a first selector valve fluidly connected between said vacuum pump and said vapor sampling mechanism.

12. The vapor trap, as set forth in Claim 11, further comprising a second selector valve fluidly connected between said organic vapor analyzer and said vapor-
20 sampling mechanism.

13. The vapor trap, as set forth in Claim 10, wherein said organic vapor analyzer further comprises a photoionization detector.

25 14. The vapor trap, as set forth in Claim 10, further comprising a computer operatively connected to said organic vapor analyzer.

15. The vapor trap, as set forth in Claim 1, further comprising a vapor transmissive material surrounding said second end portion of said housing.

16. The vapor trap, as set forth in Claim 15, further comprising a sealing material above said vapor transmissive material and surrounding said first end portion of said housing.

17. A vapor trap for detecting VOCs comprising:
a housing having a first end portion and a second end portion, wherein said second end portion is buried in ground and has a first opening below ground for receiving gas vapor and wherein said first end portion is proximate to ground level and is an enclosed portion of said housing;
a vapor transmissive material surrounding said second end portion of said housing;
and
a sealing material above said vapor transmissive material and surrounding said first end portion of said housing.

18. The vapor trap, as set forth in Claim 17, wherein said enclosed portion further comprises a coupling attached to said first end portion of said housing and a plug operatively received by said coupling.

19. The vapor trap, as set forth in Claim 18, wherein said plug is selected from the group consisting of a standard plug and a cap plug.

20. The vapor trap, as set forth in Claim 19, wherein said standard plug and said cap plug are alternatively and removably engaged with said coupling.

21. The vapor trap, as set forth in Claim 17, wherein said sealing material is selected from the group of materials consisting of concrete, grout and non-shrink concrete grout.

22. The vapor trap, as set forth in Claim 20, further comprising an organic vapor analyzer fluidly connected to said cap plug, wherein said organic vapor analyzer creates a vacuum and is operatively connected to a computer and wherein said cap plug is a vapor sampling mechanism.

23. The vapor trap, as set forth in Claim 22, further comprising a vacuum pump, wherein said vacuum pump creates a vacuum greater than said organic vapor analyzer vacuum.

24. A vapor trap for detecting VOCs comprising:
a housing having a first end portion, a second end portion and a first opening for receiving gas vapor, wherein said housing is at least partially buried in ground;
a coupling operatively attached to said first end portion of said housing;
a vapor sampling mechanism detachably connected to said coupling; and
a plug alternately and selectively detachably connected to said coupling.

25. The vapor trap, as set forth in Claim 24, wherein said vapor sampling mechanism and said plug are threadedly engagable with said coupling.

26. The vapor trap, as set forth in Claim 24, wherein said at least first opening comprises a slot.

27. The vapor trap, as set forth in Claim 24, further comprising a vapor transmissive material surrounding said second end portion of said housing.

28. The vapor trap, as set forth in Claim 24, further comprising a sealing material above said vapor transmissive material and surrounding said first end portion of said housing

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29. A vapor trap for detecting VOCs, including:
a housing, having a first end portion, a second end portion and a plurality of slots for receiving gas vapor, wherein said second end of said housing is at least partially buried in ground;

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a vapor transmissive material at least partially surrounding said housing;
a coupling operatively attached to said first end portion of said housing;
a vapor sampling mechanism detachably connected to said coupling;
a plug alternately and selectively detachably connected to said coupling;
an organic vapor analyzer fluidly connected to said vapor sampling mechanism;
15 a vacuum pump fluidly connected to said vapor sampling mechanism; and
a selector mechanism fluidly connected between said vacuum pump, said vapor sampling mechanism, and said organic vapor analyzer.

30. The vapor trap, as set forth in Claim 29, wherein any two adjacent slots are separated by a distance ranging from approximately 0.010 inches to approximately 0.020 inches, inclusive.

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31. The vapor trap, as set forth in Claim 29, wherein said organic vapor analyzer further comprises a photoionization detector.

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32. The vapor trap, as set forth in Claim 29, further comprising a computer operatively connected to said organic vapor analyzer.

33. The vapor trap, as set forth in Claim 29, wherein said vapor sampling mechanism further comprises:

a cap plug threadably engagable with said coupling;

a support structure operatively attached to said cap plug; and

5 a vapor tubing nipple attached to said support structure.

34. The vapor trap, as set forth in Claim 29, wherein the selector mechanism includes a first selector valve fluidly connected between said vacuum pump and said vapor-sampling mechanism and a second selector valve fluidly connected between said
10 organic vapor analyzer and said vapor sampling mechanism.

35. The vapor trap, as set forth in Claim 29, wherein the selector mechanism includes a three-way selector valve fluidly connecting the vapor sampling mechanism, the vacuum pump and the organic vapor analyzer.